

CLAIMS

1. A long ornament member comprising:

an attaching portion being attachable to a body to be attached; and

an ornamental portion made of a vulcanized rubber and integrally formed on a surface of the attaching portion;

wherein the ornamental portion has a surface roughened by a plurality of microcapsules thermally expanded in the ornamental portion, a plurality of concave portions of the microcapsules burst on or in the vicinity of the surface, the concave portions being outwardly opened, and a plurality of projection portions constituted by the microcapsules expanded in the vicinity of the surface and swelling outwardly; and

wherein the surface of the ornamental portion is provided with at least one of plural convex ridges and plural concave grooves, the convex ridges extending along at least one of a longitudinal direction and a lateral direction that crosses the longitudinal direction, the concave grooves extending along at least one of the longitudinal direction and the lateral direction.

2. The long ornament member according to claim 1, wherein at least one of the convex ridges and the concave grooves are configured in a manner that at least one of discontinuity

portions and deformation portions are formed at irregular positions in an extending direction thereof by at least one of the concave portions and the projection portions.

3. The long ornament member according to claim 1 or 2, wherein the surface of the ornamental portion is provided with at least one of the convex ridges and concave grooves which extend along the longitudinal direction, and at least one of the convex ridges and concave grooves which extend along the lateral direction.

4. The long ornament member according to any one of claims 1 to 3, wherein the convex ridges or the concave grooves which extend along the longitudinal direction are formed at an interval that is in a range of 0.1 mm to 5 mm.

5. The long ornament member according to any one of claims 1 to 4, wherein the convex ridges or the concave grooves which extend along the longitudinal direction are formed in a manner that a projection height of the convex ridges or a depth of the concave grooves is in a range of 0.1 mm to 2 mm.

6. The long ornament member according to any one of claims 1 to 5, wherein the convex ridges or the concave grooves which extend along the lateral direction are formed at an interval

that is in a range of 0.1 mm to 5 mm.

7. The long ornament member according to any one of claims 1 to 6, wherein the convex ridges or the concave grooves which extend along the lateral direction are formed in a manner that a projection height of the convex ridges or a depth of the concave grooves is in a range of 0.1 mm to 2 mm.

8. The long ornament member according to any of claims 1 to 7, wherein the ornamental portion is formed in a layer on the surface of the attaching portion.

9. The long ornament member according to any one of claims 1 to 8, wherein a depth of the concave grooves in the ornamental portion is limited within a thickness of the ornamental portion.

10. The long ornament member according to any one of claims 1 to 9, wherein the concave grooves in the ornamental portion have substantially V-shaped cross section.

11. The long ornament member according to any one of claims 1 to 10, wherein the ornamental portion has a color differing from that of the attaching portion.

12. The long ornament member according to claim 11, wherein

the ornamental portion has a color being lighter than that of the attaching portion.

13. The long ornament member according to any one of claims 1 to 12, wherein at least one of the convex ridges and the concave grooves of the ornamental portion are formed substantially like a straight line.

14. The long ornament member according to any one of claims 1 to 12, wherein at least one of the convex ridges and the concave grooves of the ornamental portion are formed substantially like a curved line.

15. The long ornament member according to any one of claims 1 to 14, wherein a surface modified layer that enhances at least one of wear-resistance and weather-resistance is formed on the surface of the ornamental portion.

16. The long ornament member according to claim 15, wherein the modified layer is a transparent layer through which the surface of the ornamental portion is visible.

17. The long ornament member according to claim 15 or 16, wherein the modified layer is a silicon resin coat.

18. The long ornament member according to any one of claims 1 to 17, wherein the long ornament member is a vehicle weather strip.

19. The long ornament member according to claim 18, wherein the weather strip is a door opening trim.

20. The long ornament member according to claim 19, wherein the door opening trim has a concealing lip and the ornamental portion is integrally formed on at least one of a surface of the concealing lip and a vehicle interior side surface of the attaching portion.

21. The long ornament member according to claim 18, wherein the weather strip has a hollow seal portion, and the ornamental portion is integrally formed on a surface of the hollow seal portion.

22. The long ornament member according to claim 18, wherein the weather strip is a trunk seal trim.

23. The long ornament member according to claim 22, wherein the trunk seal trim has a concealing lip and the ornamental portion is integrally formed on at least one of a surface of the concealing lip and a vehicle interior side surface of the

attaching portion.

24. The long ornament member according to any one of claims 18 to 23, wherein the whether strip further comprises a metal core.

25. A method of manufacturing a long ornament member having an attaching portion being attachable to a body to be attached and an ornamental portion made of a vulcanized rubber integrally formed on a surface of the attaching portion, the method comprising the steps of:

integrating a predetermined attaching-portion forming part made of an unvulcanized rubber mixed with an vulcanizing agent and a predetermined ornamental-portion forming part made of an unvulcanized rubber mixed with a vulcanizing agent and a plurality of fine thermo-expandable microcapsules and extruding an integrated part from a rubber extrusion die in a state in which at least one of plural longitudinal concave grooves and longitudinal convex ridges continuously extending in parallel on a surface of the predetermined ornamental-portion forming part are formed, the rubber extrusion die having an orifice whose shape corresponds to that of a cross section of the long ornament member and having at least one of projections and recesses formed on an inner surface of an ornamental portion extrusion part of the orifice of the rubber extrusion die;

heating the predetermined ornamental-portion forming part and forming a plurality of outwardly opened concave portions on a surface of the predetermined ornamental-portion forming part by expanding at least a part of the microcapsules on or in the vicinity of a surface in such a way as to exceed a limit and burst, and expanding the microcapsules provided in the vicinity of the surface of the predetermined ornamental-portion forming part to form a plurality of projection portions swelling outwardly, so that at least one of the longitudinal concave grooves and longitudinal convex ridges of the predetermined ornamental-portion forming part are interrupted or deformed at irregular positions in the longitudinal direction; and

changing the unvulcanized rubber of the predetermined ornamental-portion forming part and the predetermined attaching-portion forming part into a vulcanized rubber having rubber-like elasticity by vulcanizing through the heating of the predetermined ornamental-portion forming part.

26. A method of manufacturing a long ornament member having an attaching portion being attachable to a body to be attached and an ornamental portion made of a vulcanized rubber integrally formed on a surface of the attaching portion, the method comprising the steps of:

extruding a predetermined attaching-portion forming part made of an unvulcanized rubber mixed with a vulcanizing

agent and a predetermined ornamental-portion forming part made of an unvulcanized rubber mixed with a vulcanizing agent and a plurality of fine thermo-expandable microcapsules from a rubber extrusion die having an orifice whose shape corresponds to that of a cross section of the long ornament member;

forming at least one of plural longitudinal convex ridges and longitudinal concave grooves continuously extending in parallel on a surface of the extruded predetermined ornamental-portion forming part;

heating the predetermined ornamental-portion forming part and forming a plurality of outwardly opened concave portions on a surface of the predetermined ornamental-portion forming part by expanding at least a part of the microcapsules on or in the vicinity of a surface in such a way as to exceed a limit and burst, and expanding the microcapsules provided in the vicinity of the surface of the predetermined ornamental-portion forming part to form a plurality of projection portions swelling outwardly, so that at least one of the longitudinal concave grooves and longitudinal convex ridges are interrupted or deformed at irregular positions in the longitudinal direction; and

changing the unvulcanized rubber of the predetermined ornamental-portion forming part and the predetermined attaching-portion forming part into a vulcanized rubber having rubber-like elasticity by vulcanizing through the heating of

the predetermined ornamental-portion forming part.

27. The method of manufacturing a long ornament member according to claim 25 or 26, further comprising:

forming at least one of plural lateral convex ridges and lateral concave grooves in such a way as to extend in a direction crossing the longitudinal convex ridges or the longitudinal concave grooves before completion of vulcanizing of the predetermined ornamental-portion forming part, to thereby form a pattern that is constituted by a plurality of quadrangles each enclosed by at least one of the longitudinal and lateral convex ridges and the longitudinal and lateral concave grooves.

28. The method of manufacturing a long ornament member according to anyone of claims 25 to 27, wherein the predetermined ornamental-portion forming part is extruded in a state in which the microcapsules are not burst.

29. The method of manufacturing a long ornament member according to any one of claims 25 to 28, wherein when heating the predetermined ornamental-portion forming part, the predetermined ornamental-portion forming part is heated to a temperature sufficient to cause an outer shell of the microcapsule to soften and burst due to a pressure of an internal

gas, and the unvulcanized rubber is vulcanized by the heating of the predetermined ornamental-portion forming part.

30. The method of manufacturing a long ornament member according to claim 29, wherein before completion of vulcanizing the unvulcanized rubber of the predetermined ornamental-portion forming part, at least softening and expansion of the outer shell of the microcapsule are finished.

31. The method of manufacturing a long ornament member according to claim 29 or 30, wherein during the predetermined ornamental-portion forming part made of the unvulcanized rubber is heated, at least softening and expansion of the outer shell of the microcapsule are started when Mooney viscosity of the predetermined ornamental-portion forming part is lowered by the heating than that of the predetermined ornamental-portion forming part before being heated.

32. The method of manufacturing a long ornament member according to any one of claims 25 to 31, wherein expansion of the microcapsules and volume-expansion of the predetermined ornamental-portion forming part are performed by heating the predetermined ornamental-portion forming part, in the surface of which concave grooves each having a predetermined width are formed, to thereby reduce the width of the concave grooves from

the width of the concave grooves before being heated.

33. A method of manufacturing a long ornament member having an ornamental portion made of a vulcanized rubber, the method comprising the steps of:

extruding the long ornament member with a predetermined ornamental-portion forming part made of an unvulcanized rubber mixed with a vulcanizing agent and a plurality of fine thermo-expandable microcapsules from a rubber extrusion die in a state in which at least one of plural longitudinal concave grooves and longitudinal convex ridges continuously extending in parallel on a surface of the predetermined ornamental-portion forming part are formed, the rubber extrusion die having an orifice whose shape corresponds to that of a cross section of the long ornament member and having at least one of plural projections and recesses formed on an inner surface of an ornamental portion extrusion part of the orifice of the rubber extrusion die; and

heating the predetermined ornamental-portion forming part.

34. A method of manufacturing a long ornament member having an ornamental portion made of a vulcanized rubber, the method comprising the steps of:

extruding the long ornament member with a predetermined

ornamental-portion forming part made of an unvulcanized rubber mixed with a vulcanizing agent and a plurality of fine thermo-expandable microcapsules from a rubber extrusion die having an orifice whose shape corresponds to that of a cross section of the long ornament member;

forming at least one of plural longitudinal convex ridges and longitudinal concave grooves continuously extending in parallel on a surface of the extruded predetermined ornamental-portion forming part; and

heating the predetermined ornamental-portion forming part.